

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

THE APPLICATION OF THE UNION COUNTY)	
WATER DISTRICT, OF UNION COUNTY,)	
KENTUCKY, FOR A CERTIFICATE OF PUBLIC)	CASE NO. 90-245
CONVENIENCE AND NECESSITY; AND APPROVAL)	
OF A PROPOSED PLAN OF FINANCING)	

O R D E R

IT IS ORDERED that Union County Water District ("Union Water") shall file an original and 10 copies (two copies of engineering-related materials) of the following information with the Commission with a copy to all parties of record within 14 days from the date of this Order. If the information cannot be provided by this date, Union Water should submit a motion for an extension of time stating the reason a delay is necessary and include a date by which it will be furnished. Such motion will be considered by the Commission. Union Water shall furnish with each response the name of the witness who will be available at the public hearing for responding to questions concerning each item of information requested.

1. Provide a copy of the input data used in the computer-generated hydraulic analyses filed in this case on an IBM compatible 5 1/4-inch floppy disk.

2. In order to obtain realistic results when utilizing computer hydraulic analyses to predict a water distribution system's performance, engineering references stress the importance of calibrating the results predicted to actual hydraulic conditions.

This calibration process should include matching field measurements to the results predicted by the computer over a wide range of actual operating conditions. At a minimum this should include average and maximum water consumption periods, as well as "fire flow" situations and very high demand periods.

Based on the above, explain the procedures used to verify the computer hydraulic analyses filed in this case. This explanation should be documented by field measurements, hydraulic calculations, etc.

3. The computer hydraulic analyses filed in this case are based on a constant diurnal customer demand pattern. The average demand appears to be approximately .26 gallons per minute per customer.

Most engineering references state that instantaneous customer demands can peak at 3 to 15 times the 24-hour average demand. In addition, most engineering references also state that a water distribution system should be designed to meet at least the maximum hourly demand of its customers.

Based on the above information, state exactly what measurements were made of Union Water's maximum hourly usage. If the maximum hourly usage was not measured directly, state why it was not.

In addition, state exactly how the diurnal pattern for Union Water's system was determined. Also detail how the diurnal demand multipliers for the computer model were determined. This response should be documented by appropriate field measurements.

4. Provide a pressure recording chart showing the actual 24-hour continuously measured pressure available at the locations listed below on Union Water's system. Identify the 24-hour period recorded, the exact location of the pressure recorder and the sea level elevation of the recorder. Also state the schematic junction number nearest the location of the pressure recorder.

a. In the vicinity of the proposed tank site.

b. On the suction and discharge sides of all pump stations not previously filed.

5. Provide a list of each of Union Water's existing pump stations. Give the location, number of pumps and their rated capacities, and the purpose of each pump station. Explain how the operation of each pump station is controlled. Provide a copy of the pump manufacturer's characteristic (head/capacity) curve for each of Union Water's existing pumps which were not previously filed. Identify each curve as to the particular pump and pump station to which it applies. Also state if pump is in use and if pump will remain in use, will be abandoned or will be replaced.

6. Provide the criteria used in determining the location, size, overflow elevation and head range for the proposed water storage tank. In addition, state what other sites were considered and why they were not selected.

7. Provide a narrative description of the proposed daily operational sequences of the water system. Documentation should include the methods and mechanisms proposed to provide positive control of all storage tank water levels. The description should also include an hourly summary of how all tanks (existing and

proposed) will "work" (expected inflow or outflow of water) and how all pumps will function. The description should be fully supported by appropriate field measurements and hydraulic calculations.

8. The computer hydraulic analyses filed in this case for the existing and proposed water distribution system indicate that the potential exists for the system to experience low pressure (less than 30 psig) at Nodes 45, 69, 75, 89, 90, 96, 97, 98, 102, 157, 177, and 181. Pressures at this level are in violation of PSC regulation 807 KAR 5:066, Section 6(1). Provide details of any preventive measures or additional construction Union Water intends to perform to protect against this type of occurrence. Details should be documented by hydraulic analyses and field measurements. In addition state whether any complaints of low pressure have been received at these locations.

9. The computer hydraulic analyses filed in this case for the proposed water distribution system indicate that the potential exists for the system to experience high pressure (more than 150 psig) at Nodes 111, 185, 186, and 187. Pressures at this level are in violation of PSC regulation 807 KAR 5:066, Section 6 (1). Provide details of any preventive measures or additional construction Union Water intends to perform to protect against this type of occurrence. Details should be documented by hydraulic analyses and field measurements.

10. The computer hydraulic analyses filed in this case for both the existing and the proposed water distribution systems depict the Pride pump station "operating out of range." This

would indicate that this pump is unable to satisfy the system's hydraulic conditions as input. State whether this type operation actually occurs and if it does, state what preventive measures or additional construction Union Water intends to perform to protect against this type occurrence. In addition, provide pressure recording charts on the suction and discharge sides of this pump and any other measurements to demonstrate the actual operation of this pump station. The pressure recording charts should show the actual 24-hour continuously measured pressure available. Identify the 24-hour period recorded, the exact locations of the pressure recorders and the sea level elevations of the recorders. Also state the schematic junction numbers nearest the location of the pressure recorders.

11. The hydraulic information filed in this case indicates that there are quite a few existing 2-inch water lines of lengths in excess of 250 feet. Two-inch water lines which are longer than 250 feet for non-circulating water lines and longer than 500 feet for circulating water lines are in violation of PSC regulation 807 KAR 5:066, Section 11(2)(a). Provide a list of all existing 2-inch water lines. This list shall include the location, number of customers served, length and possibility of future extension of each line. This list should also include the lowest pressure experienced and whether any complaints of low pressure have been received.

Done at Frankfort, Kentucky, this 5th day of November, 1990.

PUBLIC SERVICE COMMISSION


For the Commission

ATTEST:


Executive Director